

EIC Detector R&D update:

MCP-PMT at ANL

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Argonne National Laboratory, Argonne, IL

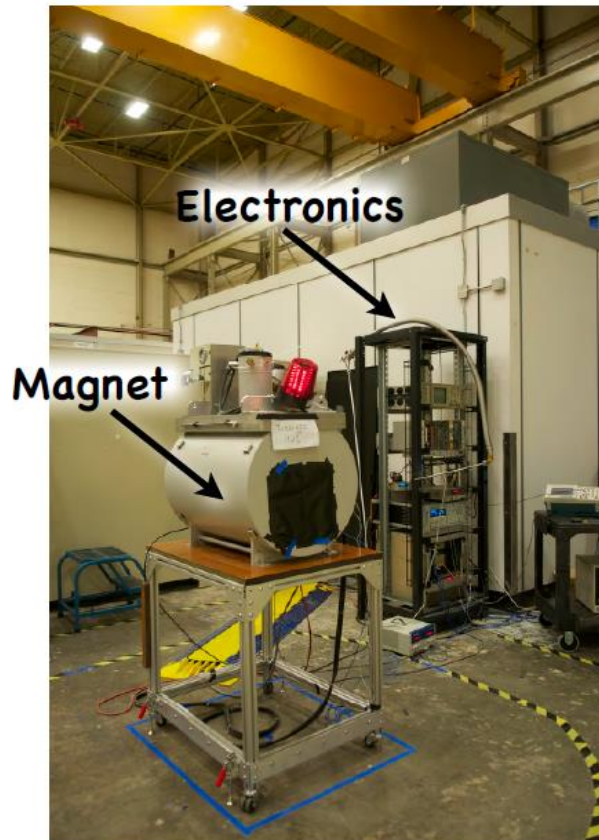
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eRD14: PID Consortium

- merge high B test efforts



High-B Sensor-Testing Facility



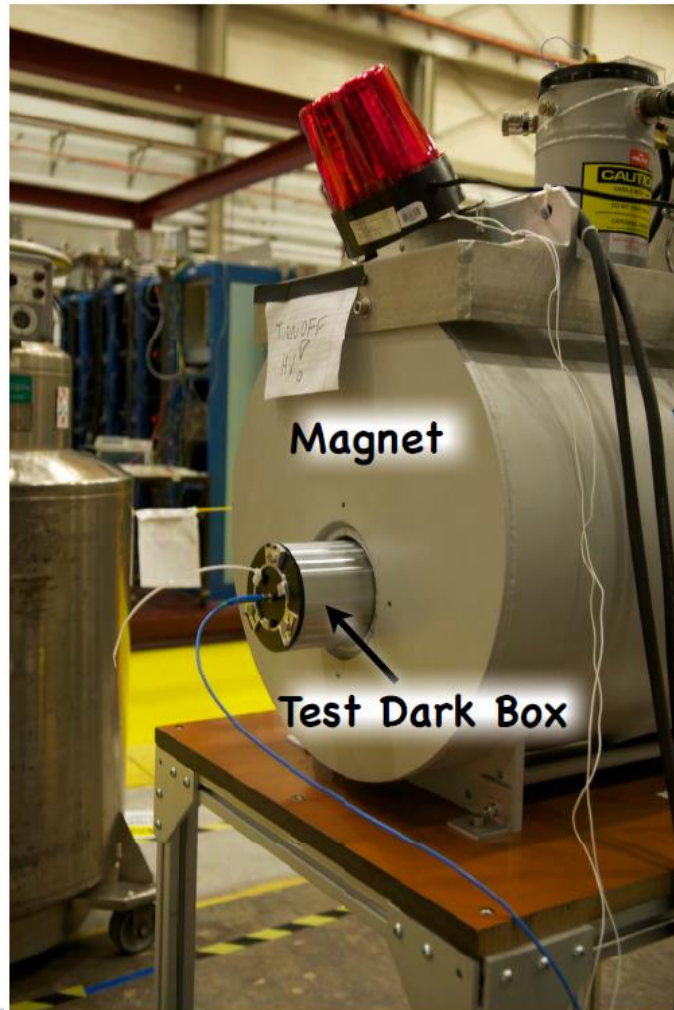
- Commissioning: July/August 2014
- Data taking: November 2014, July 2015
- People: JLab: P. Nadel-Turonski, C. Zorn
USC: Y. Ilieva, T. Cao, E. Bringley, C. Barber
ODU: K. Park, G. Kalicy, L. Allison
UVA: V. Sulkosky



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- merge high B test efforts

Major Components



Magnet:

- superconducting solenoid
- max. field: 5.1 T at 82.8 A
- 12.7-cm (5-inch) diameter warm bore
- length of bore: 76.2 cm (30 inch)
- central field inhomogeneity: $\leq 5 \times 10^{-5}$ over a cylindrical volume of a diameter of 1.5 cm and length of 5 cm

Test Box:

- non-magnetic, light-tight
- cylindrical shape: $d_{in} \sim 4.5$ inch, $L \sim 18$ inch
- allows for rotation of sensors
- LED light source, 470 nm

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Proposal:

- Enhance the capability of Argonne magnetic field facility:
Small magnet: low cost, more flexible, more available time
Large g-2 magnet: high cost, tight schedule (occupied by g-2), will only be used for large sensor test
- Move the pulser, LED, fiber optics, dark box, Katod sensors, magnet+stand and associated cryogenic equipment, various holders for different sensors, DAQ computer, voltage dividers and eventually tools.
- Move a newly purchased laser that planned to equip with an optical box.
- Students support from USC and ODU, effort support from ANL during the experiment
- g-2 magnet maintenance people also provide maintenance for the small magnet

Your opinions, suggestions, comments?



Response from Argonne discussion on meeting

- Interested in the merging, but no commitment from Argonne groups.
- Request further evaluation after coordinating with relative people and division

Comments:

- Will the small magnet affect the field of g-2 magnet? the g-2 needs very high homogeneity 7ppb/cm
- What support needs from Argonne? How to support?
- What support will other institutes provide?



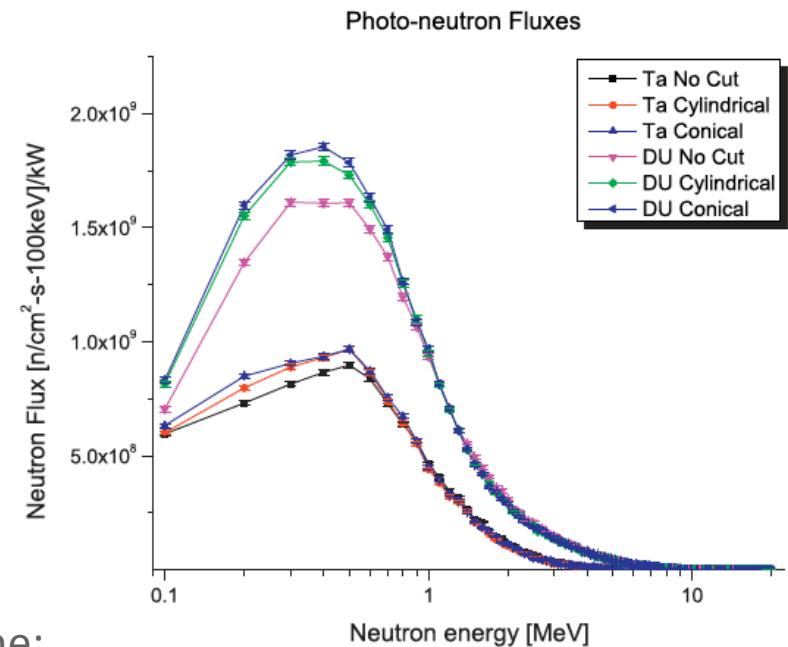
Argonne Facilities: Irradiations

Argonne Low Energy Accelerator Facility (LEAF)

- 55 MeV electron beam
- Neutron Irradiations
 - Photoneutron source
 - Peak energy 0.3-0.5 MeV up to 1 MeV
 - Flux up to 8×10^{11} n/cm² s
 - Fluence target: 3×10^{15} 1 MeV n_{eq}/cm²
- Gamma Irradiations
 - range of 1-3 MeV
 - 100 Mrad

Si detector irradiation test is planned at Argonne:

- Planned March 13-17
- Test modules in test beam before and after irradiation



Makarashvili, NIMA 696 (2012) 136-140

